To appear in: Barth-Weingarten,D, Reber, E & Selting, M (eds.): *Prosody in Interaction*. John Benjamins.

Tonal repetition and tonal contrast in English carer-child interaction

Bill Wells

University of Sheffield

Abstract

Research has so far failed to demonstrate how, or even that, young children progressively acquire a set of tones or pitch accents that have distinct meanings or functions. From recent work in the phonetics of conversation, there is some evidence that a speaker's choice of tone can be accounted for by reference to the tone used in the previous speaker's turn rather than by reference to an intonational lexicon. This view is supported by analysis of interactions between Robin, aged 19-21 months, and his mother. Robin systematically uses a repeat of his mother's tone to display alignment with the ongoing activity, while using a different, contrasting tone when initiating a new action or sequence. It is suggested that such tonal repetition and contrast are fundamental to children's learning of English intonation.

Acknowledgements

This analysis was first presented at the conference 'Prosody and Interaction', University of Potsdam, September 15-17 2008. I am grateful to the participants at that meeting for their suggestions and to the following for comments on earlier versions of the chapter: Dagmar Barth-Weingarten, Jan Gorisch, Friederike Kern, Sue Peppé, Elisabeth Reber, Gareth Walker. Special thanks are due to Juliette Corrin, for access to the recordings of Robin and his mother, and for many fruitful discussions about the data.

1. Introduction

Talk between young children and their caregivers brings into sharp focus the role of prosodic features in interaction, not least because it is the principal arena in which intonational and interactional competences are shaped. This chapter reports on a new direction in a wider research programme investigating children's development of intonation from the perspective of talk-in-interaction. Hitherto, the focus of attention has been on the delimitative and cohesive roles of accentual prominence (Corrin, Tarplee, & Wells, 2001) and how these can be learnt or accessed by the young child in the course of turn-taking with carers, taking as primary evidence the design and placement of overlapping talk and participants' orientation to overlap (Wells & Corrin, 2004).

The topic of the present chapter is the emergence of the system of tone, which is widely viewed as central to the communication of meaning through intonation. This chapter presents an analysis of interactions between Robin, aged 19-21 months, and his mother, in which Robin systematically uses a repeat of his mother's tone to display alignment with the ongoing activity, while using a different, contrasting tone when initiating a new action or sequence. It is argued that tonal repetition and contrast may be important for Robin in learning how tone works in English intonation. Following a review of relevant issues in the adult and child intonation research, an extended fragment of interaction is presented which illustrates the interplay of different aspects of English intonation in the course of interaction between Robin and his mother. This is followed by shorter data fragments which specifically illustrate the interactional roles of tonal repetition and tonal contrast.

1.1 Tone: form and function

Most researchers in English intonation have taken as axiomatic the notion that English, in most if not all its varieties, has a repertoire of distinct tones, sometimes subdivided into pitch accents and boundary tones (cf. Gussenhoven, 2004: 124). This can be understood by analogy with lexical tone systems in a language such as Mandarin Chinese. Formally, tones can be differentiated along a number of parameters, including: pitch direction (rise vs. fall vs. level); relative complexity of pitch movement (rise vs. fall-rise, fall vs. rise-fall); start and /or end point within the speaker's range, e.g. low fall (from mid to low) vs. high fall (from high to low). Different notations have been adopted in attempts to capture the range of patterns found within a language variety, across language varieties, and across languages (Cruttenden 1997: 55ff).

Functionally, there has been an assumption that the distinct tones or pitch accents are associated with distinct meanings or sets of meanings, just as tones in a lexical tone language are associated with non-overlapping sets of lexical items. In studies of intonation languages such as English, the meanings of the tones have most often been derived from the impressionistic judgement of the analyst, e.g. Halliday (1967). More recently Gussenhoven (2004: 297ff) has described the tone system of English using this approach, as has Cruttenden (1997), who describes two falling tones of English as follows:

> "Both falling tones involve a sense of finality, completeness, definiteness and separateness when used with declaratives....The low-fall is generally more uninterested, unexcited and dispassionate, whereas the high-fall is more interested, more excited, more involved...." (Cruttenden 1997: 91).

This view of tone meaning implies a speech production model like that of Levelt (1989) whereby the speaker generates a message with a syntactic structure, semantic content and a pragmatic function, the tone being selected from the language's repertoire of tones in order to convey the pragmatic function of the utterance. According to Levelt, the melody of an intonational phrase "is, through its nuclear tone, an important instrument for expressing the utterance's illocutionary force." (Levelt 1989: 398)

In an effort to free intonation analysis from reliance on the analyst's intuitive interpretation of intonational meanings, numerous studies of prosody in naturalistic conversation have been published since the 1980's, in which claims about prosodic meaning are systematically warranted from the behaviour of the conversational participants themselves, e.g. Coupler-Kuhlen & Selting (1996); Couper-Kuhlen & Ford (2004). Much of this research has been concerned with the speaker turn, its continuation and the projection of its end, in which pitch features have been shown to be implicated. For this function, a critical opposition seems to be between the presence of a major accent, projecting turn delimitation, vs. its absence, projecting further talk by the current speaker (cf. Wells & Macfarlane 1998). The extent of pitch movement apparently plays a critical role, in conjunction with other non-pitch features, in determining whether a response is expectable and if so, what type of response (Barth-Weingarten 2009). The child's control over the amount of pitch movement deployed on the different elements of the utterance has also been shown to be central to the early development of young children's turn-construction abilities (Corrin et al. 2001).

As for the direction and shape of the terminal pitch contour, though it is often thought that this is the determining factor in conveying pragmatic meaning (cf. Cruttenden 1997), Szczepek-Reed (2004) has suggested that in naturally occurring talk-in-interaction this may vary in rather unsystematic ways, in relation to pragmatic function. In fact, within the 'prosody and conversation' literature, there has been rather little engagement with tonal contrastivity and its possible functions. An exception is the systematic investigation of the potential opposition between tones at the same place in interactional structure that was carried out by Walker (2004). Walker examined the phonetic characteristics of adjacency pairs in a corpus of naturally occurring conversational data. The first pair parts included invitations, enquiries, offers, assessments and requests. Syntactically, both interrogative and declarative forms were found and two distinct pitch contours were also found, one falling and the other rising. However, there was no evidence of any relationship between the syntactic form of the first pair part and its pitch contour; nor between pitch contour and the type of first pair part, for example whether it was a request or an assessment. Thus neither syntactic nor pragmatic accounts of the meaning of English tones were supported.

In sum, it is hard to find robust evidence from studies of naturally occurring talk that speakers and listeners actually make use of tonal contrast to convey meanings in the way that many intonation researchers have suggested. Much recent intonation research has put to one side the question of how intonational form, including that of tones or pitch accents, relates to meaning and has instead focussed on formal aspects of pitch modelling. However, this does not mean that tone is interactionally irrelevant. Walker (2004: 119ff) demonstrates that, when granting a first speaker's request, one resource that second speakers use is to match the pitch contour of the

request itself, whereas when a request is declined such pitch matching is absent. This finding contributes to a growing body of research demonstrating the interactional relevance of prosodic repetition by a next speaker (e.g. Couper-Kuhlen 1996, Szczepek-Reed 2006). This line of research, focussing on the idea that a speaker's choice of tone may on many occasions be accounted for by reference to the previous speaker's turn rather than by reference to an intonational lexicon, informs the research into a young child's use of tone that is described in the present report.

1.2 Tone in child language development

While the belief lingers that different tones or pitch accents will eventually be shown to have distinct and inherent meanings, there is virtually no recent research on how children might come to acquire such a system. The most recent studies of children's development of tone have, like adult intonation studies, concentrated on formal aspects. For example, Balog & Snow (2007), having identified an end point in terms of the tonal or contour inventory of adult American English, studied children's productions at different ages (12-17 vs. 18-23 months) to see (a) which adult contours they already use (b) which adult contours they do not yet use and (c) what non-adult contours they use. The authors were unable to demonstrate an age-related shift towards the adult inventory and distribution of tones. This result indicates that, whatever is going on in terms of intonation at this crucial early stage in the development of communicative skills, it cannot be interpreted as a progressive acquisition of adult tones. Moreover, such an approach has nothing to say with regard to how a child's ability to accurately reproduce the intonation contours of the community relates to the child's ability to use these contours in conversation.

This issue is starkly highlighted in the often reported phenomenon of echolalia in cases of severe (low-functioning) autism, in which the child may produce perfectly formed, adult-like prosodic contours but with very limited ability to use them as an interactional resource (Local & Wootton 1995). Such cases suggest a potential dissociation between form and content with respect to tones and their development.

As discussed above, researchers investigating the functions of tone in intonation languages typically assign a distinct meaning or set of (normally, related) meanings to each member of the tone system identified for that language. On this view, the young child's task is, formally, to learn a system of tones along with their phonetic exponents, and, functionally, to learn what the meanings of each tone are. However, the studies that have taken this approach have produced problematic results.

The most comprehensive description of intonation development in functional terms is Halliday's study of his son Nigel (Halliday 1975). This description is situated within a functional approach to adult language. Up to around a chronological age of eighteen months (C.A. 1;06), Nigel used high level tones on proper names, and otherwise a variety of falling tones. Then at C.A. 1;07, Nigel within one week "introduced a systematic opposition between rising and falling tone" (Halliday 1975: 52). He retained this with complete consistency from C.A. 1;07 – 2;0. In general, rising pitch was used for utterances demanding a response – Halliday calls these Pragmatic; while falling pitch was used for utterances not demanding a response, which Halliday calls Mathetic. These led into Interpersonal and Ideational functions respectively, in the next phase of development, which is close to the adult functional system as conceived by Halliday.

According to Halliday (1975: 53), this use of intonation to express Mathetic vs. Pragmatic may be specific to Nigel – other children will not necessarily follow the same path. Moreover,

> "…Nigel is *not* using intonation as it is used in adult English, since the contrasts in meaning that are expressed by intonation in English are still outside his functional potential. He is adapting the elementary opposition between rising and falling, which he knows to be significant, to a functional system that is within his own limitations." (Halliday 1975:53).

In fact, Halliday later claims that "Nigel's use does reflect the basic meaning that the opposition between falling and rising has in English" (1975: 136), suggesting that there is a smooth progression that leads Nigel from the contrastive use of rise vs. fall for the emergent functional categories Pragmatic vs. Mathetic, to the adult system of tones, which can take on a variety of functions within the grammar of English (cf. Halliday 1967).

From the perspective of subsequent research, one important methodological drawback to Halliday's study is that the data derive from field observations without the use of audio or video recordings. This raises the issue of the replicability of the analysis, which later studies have sought to address. With the aim, similar to Halliday's, of tracking the developmental relationship between pitch variables and communicative functions, Flax et al. (1991) recorded three mother–child pairs at three time points throughout the second year of life. F0 properties of all utterances were measured, leading to a classification of each utterance as either rise or non-rise. A set of functional (communicative) categories, including four types of request, three kinds of comment and so on, was derived from Halliday (1975) and other similar studies.

Flax and colleagues found no change over time for any child, in the relation between communicative function and tone (rise vs. non-rise). This does not tally with Halliday's account of important intonational changes in Nigel's language over the same period. Moreover, there were considerable differences among the children regarding the proportion of rise vs. non-rise tones used. Finally, although rises tended to be used for requesting functions (rather than other functions), non-rises too were used for requesting functions (as well as for non-requesting functions). Since their results did not present a clear developmental picture, Flax and colleagues recommended more detailed research on caregivers' input, suggesting that a child's choice of pitch direction (rise vs. non-rise) might be influenced by local contextual factors. This resonates with the research on prosody in talk-in-interaction described earlier, which emphasizes the importance of the sequential position of a turn at talk in determining its prosodic characteristics.

2. Method

In the present study, local sequential factors are given analytic primacy, in order to shed light on the use of tones by a young child learning English. Naturalistic recordings (described below) were analysed without reference to pre-defined sets of communicative categories on the one hand or of tones on the other. Instead, evidence was sought from the orientation of the participants as to whether tone choice was relevant to their attempts to make sense to one another, and if so, how.

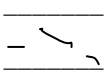
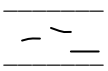
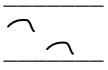
Material is taken from eight interactions, each of between 20 to 30 minutes, between Robin (male) C.A. 1;07-1;09, and his mother. The home language was Southern Standard British English. The family dog (Elsa) was also present. The participants were engaged in play activities, mainly with a jigsaw puzzle board into which pieces had to be fitted. Video and audio recordings were made, with a researcher present. Intonation and other prosodic features were first transcribed impressionistically, as were the segmental aspects of Robin's talk. A suggested gloss of Robin's utterance is presented in italics, on the right of the phonetic transcription. Where no gloss has been attempted, this is indicated by "?". Key portions were later subjected to acoustic analysis, though because of the quality of the original recordings and characteristics of the child's vocal productions, it was not always possible to obtain a reliable acoustic record. The transcripts of extracts presented here represent the convergence of results from both these procedures, with the aim of keeping them readable. For this reason, details of nonverbal activity have been kept to a minimum. Pitch features of Robin's talk are presented iconically between staves representing what is taken to be his habitual pitch range, which reached as high as 800 Hz on occasion, the base being in the region of 250 Hz. The same procedure is used for those of his mother's turns which are most relevant for the details of the present analysis. Her pitch in these interactions ranged from around 180 Hz to 500Hz. In the interests of space and readability, the intonation of the mother's remaining utterances is presented using a systematic notation derived from Halliday (1967). This is taken to represent intonation patterns that form part of the linguistic resources of mature speakers of Southern British English, such as Robin's mother. In line with one of the practices of Conversation Analysis, examples are presented that illustrate the main findings of detailed sequential and phonetic analysis of a larger number of individual cases. Video recordings of the data fragments can be viewed at http://www.shef.ac.uk/hcs/staff/wells.

3. Accentuation and tone

Researchers in English intonation have found it useful to identify at least three subsystems: a system for marking boundaries between intonational phrases (or tone units), a system of accentuation and a system of tone. These subsystems are closely connected: the accentual system is the principal means for marking intonational boundaries, and an accent is realised principally by means of a tone. Though these systems can be separated out in theory, in practice they are implemented simultaneously by speakers. In order to prepare the ground for a more detailed analysis of the tonal system, the interconnections between these three systems, as manifested in carer-child interaction, will be illustrated first, with reference to Extract 1. Although the pitch behaviours that Robin and his mother produce are very diverse, it is nevertheless evident that the prosodic design of their turns is shaped by sequential factors. These include: (a) projecting completion of the turn in progress; (b) orientation to what has been presented as the topic of the prior turn; (c) alignment with the action in which the other participant is currently engaged.

(1) RB8 'teddy'

Robin (R) is seated on the floor, fitting pieces into a form board. He is looking at the board throughout and does not have eye contact with his mother. His mother (M) is sitting on the floor close to the form board and to Robin, watching him as he places the pieces onto the board. Each piece depicts something different; in this extract, pieces depicting a soldier, a duck and a teddy bear are involved.

1	M:	whos `this ((holding soldier piece))	
			
2	R:	ʔɑ səuʃə {f}	*a soldier*
3	M:	a ˇsoldier (.) and ˈwhos `this one ((holding teddy piece))	
			
4	R:	ʔɑ dɪdi	*a teddy*
5	M:	a `teddy thats `right	
			
6	R:	ʔɪ dɛ ((placing duck piece))	*it there*
7	M:	yes but push his `head in (.) ´first and then its `easier	
			
8	R:	dɪs	*this*
9	M:	thats ´right (.) thats ´it	
			
10	R:	ʔəɲɑ=	*in there*
11	M:	=so where does the `teddy go (2.0)	
			
12	R:	ʔɑu dɛ= ((placing teddy piece))	*on there*
13	M:	=ˈgoes in `there d'you ´think	
			
14	R:	ʔa dʲə {p}	*on there*

In general, talk about the piece in question may precede, accompany and/or follow the placing of the piece, while on some occasions talk about a piece may be separated from the action of placing the piece. This is the case in (1): at line 3, Mother does not wait for Robin to place the

soldier piece before eliciting the labelling of a new piece, the teddy. Thus in lines 1-5 there are two typical three-part labelling sequences, in which Mother requests the name of the piece. Robin responds with the name, delivered with a falling pitch contour to the base of his range. This is treated as a completed turn by Mother, who follows up immediately with a repeat. The ability of Robin and other children at a similar developmental stage to use prosodic means to signal completion of the turn is described by Corrin et al. (2001).

Although in line 6, instead of placing the teddy piece, Robin engages in placing a duck piece (cf. lines 7-10), there is evidence of an expectation, at least on the part of his mother, that the labelling of a piece will at some point be followed by Robin placing the piece: in line 11, she reintroduces the teddy, both by connecting back (using *so*) to the earlier talk about the teddy and by locating the main accent on *teddy*, thereby retopicalising it. After a pause, this topic is taken up by Robin in line 12. It forms the basis for further talk from Mother in line 13, but now there is no direct mention of the teddy, it is implicit in the omitted subject of *goes in there*; and in line 15, where *teddy* is again mentioned, it no longer carries the main accent. Mother's treatment of the lexical item *teddy* in this sequence conforms to usual descriptions of how new and old/given items are handled in terms of accentuation and anaphora in English (e.g. Cruttenden 1997: 73ff).

In line 15, where *teddy* is not accented, the main accent is located on *neck*, again with a fall. However, in line 16, Robin's turn has two clear points of intonational prominence. The first is on *[daɪ]*, which is the expected focus in response to Mother's preceding question; then there is a further prominence on *[dɪdi]*, at the end. Both accents have rising-falling pitch as well as

intensity peaks, the first being more prominent on both counts. In line 17, following a brief overlap and self-repair, Mother appears to recast and expand Robin's turn: the main accent is a rise-fall on *tie*, reaching high in her range and mirroring the accent on *[daɪ]*,that Robin used. At the lexical level, Mother expands Robin's *[dɪdi]*, to *around teddy's neck*, realising this with an accent that has rising pitch from low to mid in the range, subordinate to the accent on *tie* but nevertheless prominent compared to the rest of the utterance. Thus Mother's turn can be seen as a partial recast of Robin's turn in accentual terms, involving both pitch copying (the accent on *tie*) and modification – of Robin's final rise-fall accent to a low rise. As mentioned above, according to standard accounts of English accentual placement, this reflects the status of *teddy's neck* as already given. Thus from the perspective of accentuation, the sequence from line 11 to line 17 illustrates how accent placement shifts to reflect the shifting topical status of semantic elements. Discussing a similar example from the same data set, Wells & Corrin (1994) proposed that such sequences, involving overlap and repair, provide rich opportunities for the child to learn about accent placement and prominence as resources for handling topic.

It is against this background of prosodic development, whereby Robin can be seen to project turn completion and to be engaged in learning about accentuation in relation to topic, that the emergence of the tone system will now be considered. The focus will be on sequences similar to the one that now follows in Extract 1, from lines 18-23. The pitch pattern in Robin's line 19 echoes not only line 18 but also the final part of Mother's line 17, with its terminal rise. Mother seems to treat Robin's line 19 as a truncated version of line 17: in line 20, her recast *tie on teddy* is more succinct than in line 17, *tie around teddy's neck*. However, she now mirrors the final rise

of Robin's line 19. Thus lines 18, 19 and 20 are each analysable as having a final rising tone. There is no evidence that any of them is being designed or treated as a request – one function traditionally associated with a high rising tone: there is no eye contact, and throughout Robin continues to focus on fitting the piece into the puzzle. Rather, the rising tones appear to be the product of the current speaker copying or repeating the tone used by the other speaker in the preceding turn.

Why should the participants copy each other's tone? One possibility is that, following the temporary disruptions of overlap, repair and pause in lines 16-18, tonal repetition contributes to a mutual display of alignment between the speakers, who are orienting to a shared understanding and appreciation of the activity in progress. In line 21, Robin provides his own expansion, adding *[ijo ve]* prior to *[da:: didi]* the latter hearable as *tie (on) teddy*. This latter portion preserves the pitch pattern of the preceding two lines, as does Mother's turn in line 22: she has been looking at Robin as he places the teddy piece in the board, and offers her confirmation and approval: *yes I think he looks good there*. Mother's more explicit orientation, in line 22, to Robin's action in line 21 may reflect the phonetic 'upgrading' that is evident in Robin's turn: while he retains the rising pitch pattern of the preceding turns, his turn is stepped up in the pitch range and produced with increased volume. In line 23 Mother breaks the cycle of tone repetition, with a fall on *soldier*, as Mother shifts the topic back to a puzzle piece originally introduced in line 1.

To summarise, sequential factors that appear to influence the distribution of accent and tone in this extract include:

a) Turn projection: turn exchange happens immediately or shortly after the production of a tone by current speaker (e.g. lines 1-15).
b) Topic: this is evident in the problematic distribution of tonal accents in lines 16-17.
c) Alignment with the action in which the co-participant is engaged. This is evident in the tonal repetition of lines 18-22.

4. What is tonal repetition?

In the remainder of this chapter, we will explore the relevance of repetition and alignment for the child's development of tone usage. Observations of sequences like lines 18-22 of (1) suggest that one key issue for a young child when producing a turn at talk is whether or not to repeat the tone of the prior turn, in the light of local considerations regarding alignment with an action in progress. This leads to the hypothesis that opportunities to repeat adults' turns can provide the child with access to the functional use of tone. It has been long noted that in interactions between young children and their carers, instances of repetition are common – carer repeating child, and child repeating carer (Keenan 1983). In talk-in-interaction, one fundamental choice that participants, including young children, have each time it is their turn to talk, is: shall I repeat what the previous speaker said, or shall I do something else? Repetition can be at various levels (Schegloff 1996), one of which is prosodic. Within interactional analysis of adult talk, and to a lesser extent of adult-child talk, there has been much careful analysis of different types of repetition, elucidating both formal and functional aspects. This provides a basis for exploring child repeats of adult turns, in relation to intonation development.

From the phonetic perspective, there are a number of parameters that can be repeated, including parameters relating to individual syllables (pitch height, direction, loudness) and to longer phrases/utterances (e.g. pitch register, rate) (Szczepek Reed 2006). From a formal point of view, both verbal and prosodic repetitions are on a continuum:

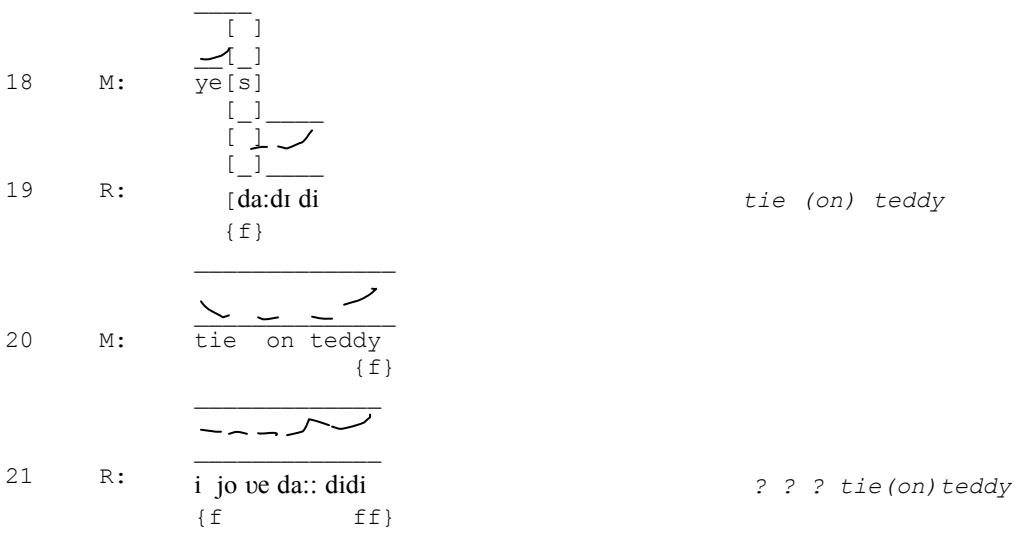
> "in both cases it is useful to conceptualise repetition not as a binary, plus-or-minus feature but as a cline, extending roughly from a 'perfect copy' at one extreme through a 'near copy' at some intermediate stage to a mere 'copy for all practical purposes' at the other extreme" (Couper-Kuhlen 1996: 368).

Formally, the issue for the child is to work out what counts as a copy for all practical purposes, i.e. repetition of the prior speaker's tone; as opposed to what will be heard and treated as something else and therefore potentially have different functional implications. The latter will be referred to here as tonal contrast. To work out whether a particular turn constitutes tonal repetition or tonal contrast is a tricky task, for the analyst and possibly for the child too:

> "As far as pitch is concerned, the possibilities for repetition are more complex, due to the interaction of stress and pitch. It is customary to identify simple or complex pitch movements on or initiating on stressed syllables, which I shall refer to as *tones*. The stressed syllables of two utterances may have the same or a similar tone, with the same or similar amount of pitch excursion. Moreover the pitch of unstressed syllables in a copy may have varying degrees of resemblance to those of the original." (Couper-Kuhlen 1996: 370)

Part of the challenge for the child is to learn to produce versions of adult tones that are recognisable as that tone and not another one. Some of these issues can be illustrated from Extract 1, lines 19-21, reproduced here as (1a):

(1a) RB 8 'tie on teddy'



In Robin's turn in line 19, there is a rise of nine semitones from the (level) first syllable (c. 330 Hz) to the end of the turn. Mother's turn in line 20 is set relatively high in her own pitch range, but nevertheless is slightly lower in absolute terms than Robin's in line 19. There is a drop of two semitones from the initial *on* to *tie* and a rise of seven semitones from *on* to *teddy*. In line 21 the pitch shape after the first three syllables is very similar to that of line 20. The first three syllables themselves can be heard as a head that Robin has added before the tonic segment. In line 21, the syllables *[da:]* and the final *[di]* are about the same height, with a dip in between. The relative height of the *[da:]* syllable compared to what follows is comparable to the higher pitch on *tie* in Mother's line 20, the preceding turn, though line 21 differs slightly from line 20 in that the F0 of this initial accent is just as high as that of the final syllable, and also has an intensity peak. In line 21, the rise from dip to end is ten semitones. The overall pitch setting in register is

considerably higher than line 19 (and line 20), at around 430 Hz for the portion immediately preceding the rise.

So what does this suggest for a definition of tonal repetition? Our proposal is that the perception of two accents per line, separated by a dip in pitch, with a rise on the final accent of at least four semitones (cf. Balog & Snow 2007) is sufficient to render lines 20 and 21 hearable as tonal repeats. This is not undermined by the addition of a 'head' in line 11, since it is subordinated in terms of pitch height. Nor is it undermined by the difference in overall F0, which may prevent a hearing of mimicry that could have resulted from absolute register matching (Couper-Kuhlen 1996). It is suggested that tonal repetition involves the copying of the tonic segment, with or without additions in the form of a head; and without absolute register matching.

This still leaves open the question: what are the limits to treating a tonic segment as 'the same' as the preceding one? For example, can a fall-rise be treated as a repeat of a rise, and vice versa? Can a low fall be treated as a repeat of a high fall, and vice versa? In what follows, the issue of what can count as tonal repetition is explored by focussing in the first instance on interactional analysis, the hypothesis being that: if a turn *functions* in the unfolding interaction as a repeat of the prior turn, then there is a prima facie case for treating the tone of the second turn as 'the same' as that of the first turn.

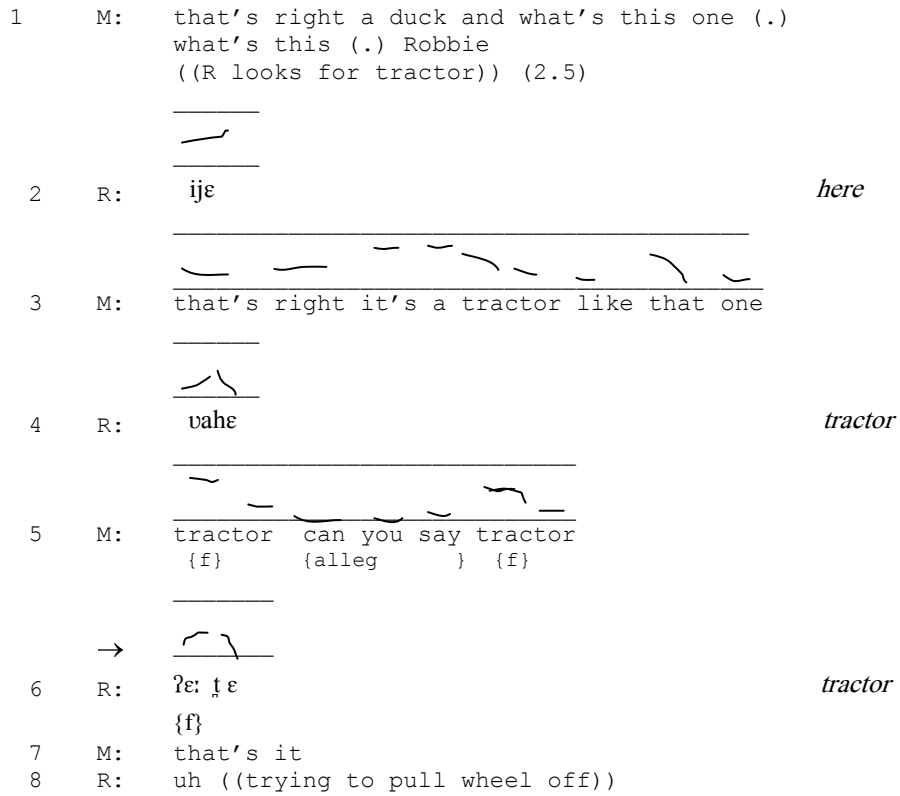
While prosodic aspects of adult repeats of child turns have already been the subject of detailed interactional analysis (Tarplee 1996), the focus here is on child repeats of adults, in order to explore the child's use of tones. All instances were identified in the data where there appeared to

be exact, or almost exact *verbal* repetition by Robin of the end of his mother's prior turn. Verbal repetitions were examined in the first instance, since they present prima facie evidence that repetition is relevant for participants at that point in the interaction. There is the possibility that some verbal repetitions will also involve tonal repetition, whereas other verbal repetitions may be produced with a different tone, i.e. contrasting with the tone of the prior turn. This permits the exploration of the specific role of *tonal* repetition. The collection of verbal repetitions was then subdivided into groups according to their most salient interactional features.

5. Tonal repetition following other-initiated other-repair

There is at least one environment where repetition of the immediately prior word produced by Mother is relevant and indeed expected in the child's next turn: that is, following an explicit request by Mother for repetition, as in (2).

(2) RB5 'tractor'



Robin's turn in line 6 matches the end of the preceding turn: The final words of line 5 and line 6 both have a stepped variant of a falling contour. Measurement of F0 is hampered by the phonotactic structure of *tractor*, where all the consonants are voiceless. With that proviso, the step down in line 5 seems to be around seven semitones, and in line 6, also seven semitones. In both versions, there is an intensity peak on the first but not the second syllable; the durational ratio of the two syllables appears similar, at around 2:1, creating a similar rhythmic pattern. Thus not only the pitch patterns but also the overall prosodic shapes of the two versions of tractor

resemble each other. Following Robin's repeat in line 6, Mother closes the topic in line 7, and in line 8 Robin moves to further play.

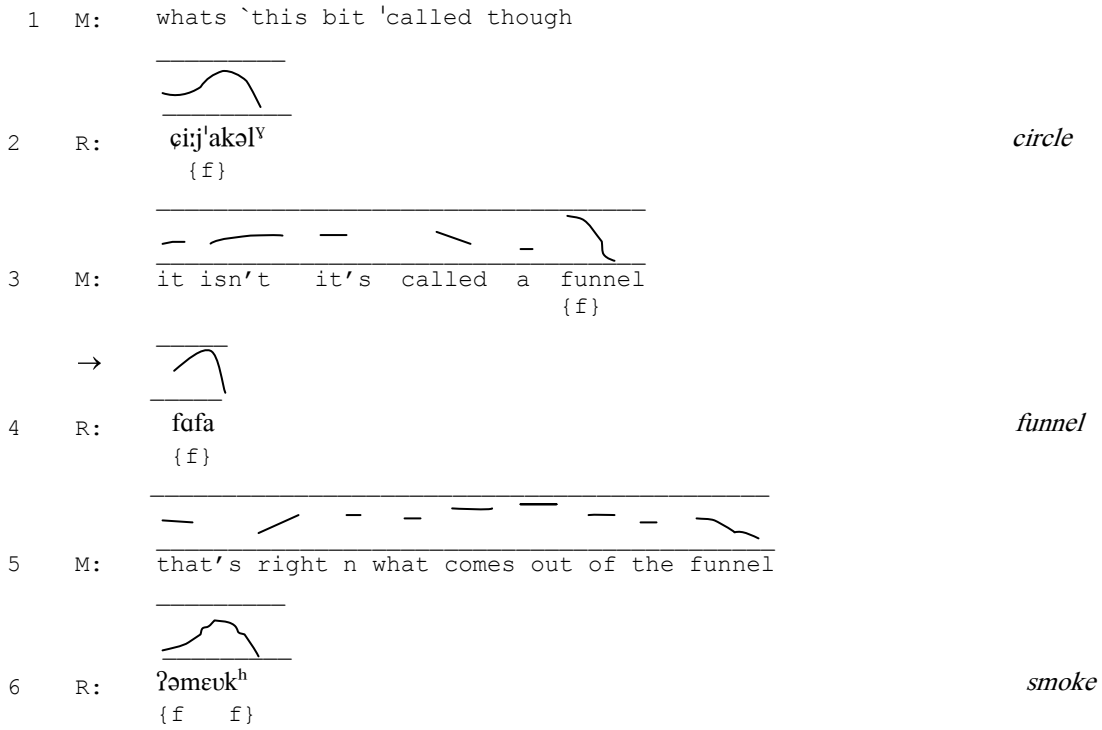
In such cases, both Mother and Robin orient to Robin's verbal and tonal repeat of the word just pronounced by Mother, as a sequentially fitted move: it serves to close the sequence, without further work. This suggests that Mother is content that Robin understands what this word means and even with how it is pronounced, although at the segmental level there are considerable phonetic divergences between her version and his (cf. Tarplee, 1996). Explicit requests for repetition like the one in line 5 invariably come at the end of an extended repair sequence that has focussed on articulatory aspects of pronunciation. The request invariably follows Mother having named the item herself. These examples suggest that repair sequences may be one environment that is fruitful for learning about tone: here, that matching the tone of the model is part of producing an acceptable version of the word that caused trouble, thereby enabling the repair sequence to be closed (cf, Corrin 2010 for a more extensive account of repair in the talk of Robin and his mother).

6. Tonal repetition in other-initiated self-repair

Repair can provide a less explicit opportunity for a child repeat: this is following an adult correction of the child, in an other-repair sequence initiated by the adult. The adult supplies the correct form and the child immediately repeats it, along with its tone, as in lines 3 and 4 of (3). In

line 5, Mother treats Robin's turn as an acceptable version of the word, with *that's right*, following which she moves the topic on.

(3) RB8 'funnel'



In the last phrase of line 3, *a funnel,* there is a 1.5 semitone step up from *a*, to the first syllable of *funnel*, then a fall of eight semitones on the second syllable. Intensity is higher on the first syllable. In Robin's turn in line 4, there is a three-semitone rise on the first syllable, descending ten semitones to the final syllable. There are intensity peaks on both syllables, the higher being on the first. Their tonal shape as just described is similar, even though the alignment of the rise-fall pitch contour differs between the two speakers' versions of the phrase, as does their segmental content. This illustrates one of the methodological issues in describing tonal

repetition: tones that the co-participant (and the analyst) may perceive and respond to as 'the same' may not be identical in terms of their F0 contour, because of the effect of segmental differences (cf. Gussenhoven 2004: 7-10).

In Extracts (2), and (3), illustrating repair environments, the tone repeated by Robin is a fall of some kind, but this is not always so: in Extract (4) the repeated tone is a rise. Although it is again an other-initiated repair sequence, the issue in (4) is not that of producing the correct label, as in the earlier examples, since Robin produces an accurate version of *cheese* without repair at line 3. The trouble arises with regard to the location of the cheese.

(4) RB6 'cheese'

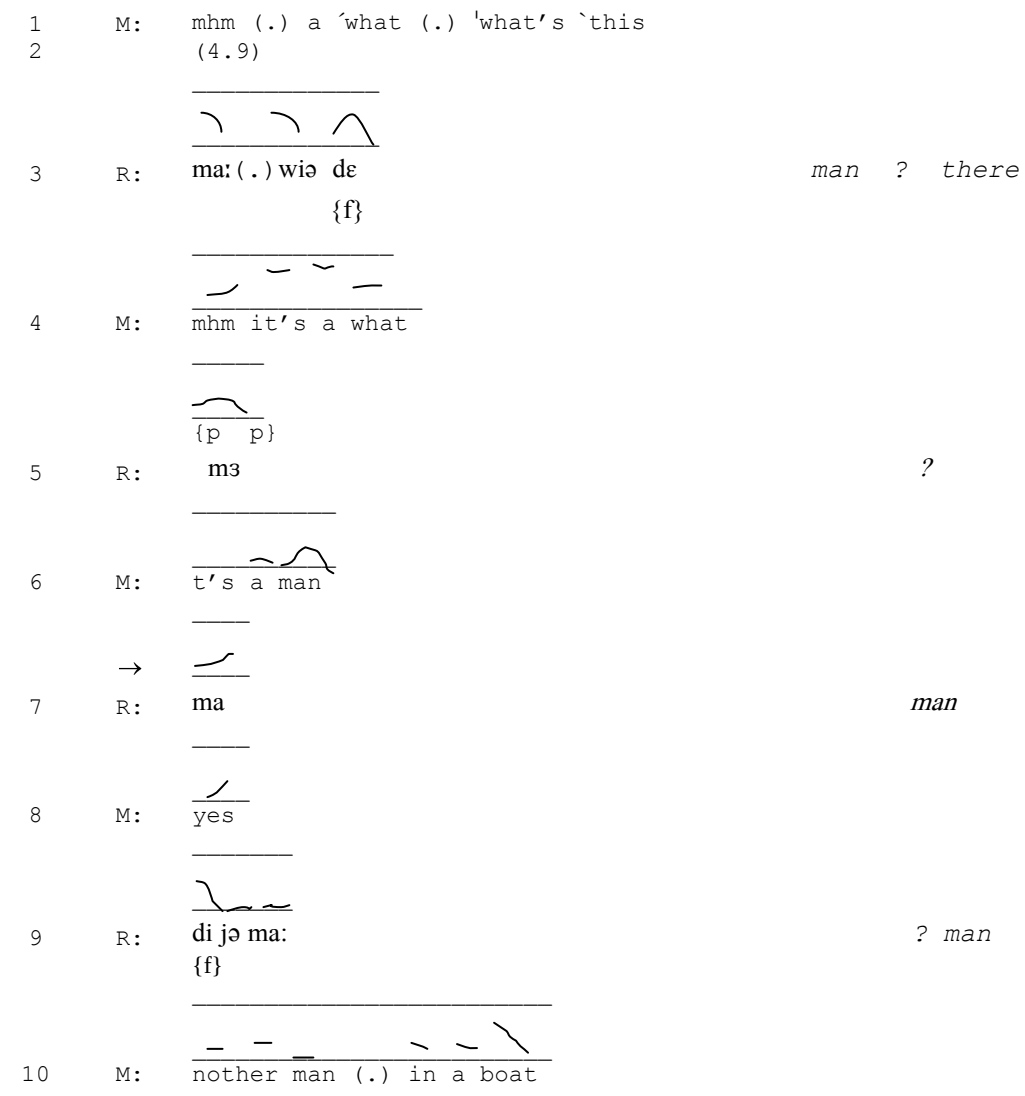
1 M: can you see any ´cheese (2.2)
is there any `cheese in this ´picture
2 (1.1)
3 R: ((sitting in M's lap, looks at book))
tʃis *cheese*
4 (0.6)
5 M: ˈwhere's some `cheese
6 (.)
7 R: ((looks at book; finger scans page, head lifts, points across room))
ə ge di: ɒ dis *?*
{f f}
8 (0.6)
9 M: hm
10 (.)
11 R: ((repeats action of pointing across room))
12 nʌ dis *no cheese*
13 (0.5)
14 M: no cheese
15 (2.0)
16 R: ((looks back to book, turns to next page))
→
nəʊ ˈdis *no cheese*
17 (.)
18 M: no cheese
{f}
19 (2.0)
20 what are `these (.) whats `that

The problem for Mother arises from line 7, where Robin develops the topic, animatedly but unintelligibly. Mother's open class repair initiator in line 9 gives rise to Robin's repair in line 12, with what appears to be a truncated verbal reformulation, accompanied by a repeat of the point action (line 11), with falling pitch. In line 14, Mother produces a candidate interpretation of Robin's turn, including embedded correction of the onset consonant of *cheese*, with a rising, i.e. contrasting, tone (seven semitones). Although, as will be shown in the next section, tonal contrast has the potential to initiate a new course of action in the talk, there is no evidence from Robin's response in line 16 to indicate whether he regards Mother's turn as initiating a new action, and if so, what kind of new action. In line 16, Robin produces a verbal repetition with a rise of six semitones, i.e. a repetition of Mother's step rise. There is no evidence that either Robin or his mother are treating his repeat at line 16 as an understanding check, or any other action that actively seeks a response from M: his attention is back on the book, not out in the room where it was when he produced the trouble source (lines 7 and 11) and he is progressing the joint activity by turning to the next page. Thus, Extract (4) demonstrates that a rise can be repeated too: Robin's tonal repetition in repair sequences is not restricted to falls. A comparable repeat of a rising contour was described in Extract (1a), lines 20-21.

7. Tonal contrast to initiate repair

Although Robin's verbal repeats are most often accompanied by tonal repetition, this is not always the case. Extract (5) is another labelling sequence where Mother initiates a repair from Robin (line 4).

(5) RB5 ‘man’



The sequence is similar to earlier extracts as far as line 6. However, in line 7, Robin does not do a tonal repeat to accompany the verbal repeat: whereas in line 6 Mother has used a rise-fall contour over the phrase, Robin produces a rise of five semitones.

Mother's *yes* response in the next turn (line 8) suggests that she is treating Robin's verbal repeat with tonal contrast as an understanding check that requested confirmation. None of the cases of verbal plus tonal repetition by Robin in the earlier extracts was treated by Mother as a request for confirmation, whether the tone in question was rising or falling. This suggests that it is the tonal contrast that constitutes the verbal repeat as an understanding check. Following Mother's confirmation, which closes the repair sequence, Robin immediately develops the topic further, in line 9.

8. Tonal contrast and development of topic

In Extract (5), which showed that tonal contrast by Robin can initiate a new action, the tonal contrast took the form of a rise contrasting with the mother's fall. The new action was an understanding check, in the course of an other-initiated repair sequence. In Extract (6), there is again tonal contrast but this time Robin produces a fall, contrasting with Mother's rise. His new action is to shift the topic of attention and of the talk from one object to another. The two objects in question are both 'balls' – one an actual ball, the other a jigsaw piece depicting a ball. For both participants there is an issue of clarifying which of the two balls they are talking about. In lines 1-2, Mother makes clear that she is talking about the jigsaw piece. In lines 4-6, the direction of Robin's gaze makes it clear that his reference is to the real ball, which Mother confirms in line 6. However, in line 7 Robin refers to the ball jigsaw piece, which he has just picked up again.

(6) RB4 'two balls'

1 M: you got the `ball
2 'where does the 'ball `go(.) from the `jigsaw
3 (3.0)
((R, holding jigsaw ball, walks from jigsaw to near M))
4 R: bɔ ((looking at real ball on floor, drops jigsaw ball)) *ball*
{p}
5 ɛ jə dɔk^{h} ((R picks up real ball with lh , transfers it to rh)) *?*
→ 6 M: there's your ball
→ 7 R: bɔ ((R picks up jigsaw ball with lh)) *ball*
{f}
8 M: two balls
9 R: heh
((R turns round, walks back to jigsaw holding real ball and jigsaw ball))
10 R: ʔɛ i (.) jɛ ((attempting to put real ball in jigsaw)) *?*
11 M: it doesn't `fit so well `does [it]
12 R: [jɛ]((fitting jigsaw ball in jigsaw))
13 M: that's right (1.3) that one goes in there

In line 6, the main prominence is on *ball*, as it has the main pitch movement and is relatively loud. The F0 rises by c. 11 semitones. By contrast, in line 7, Robin uses a wide rise-fall on *ball*. Although the falling component is not captured by the pitch tracker, it is clearly audible over the last part of the utterance, accompanied by diminution in energy.

Though it is lexically a repetition of Mother's final word in line 6, the referent of Robin's turn in line 7 is different: Robin was previously referring to the real ball piece, but now he is referring to the jigsaw piece, which he picks up. This topic shift gets taken up by Mother in line 8, where the tonic is on *two*. The topic of two competing balls is then animatedly pursued by Robin, who tries to fit both into the jigsaw. This extract thus indicates that tonal contrast can be deployed by Robin for topic development. On the other hand, it was shown in earlier examples that Robin's tonal repeats left the onus of topic development on his mother or else led to sequence closure. Thus the system available to Robin, of either repeating or not repeating the final tone from his mother's prior turn, provides him with a resource for managing topic development and sequence closure.

9. Conclusion

Occasions on which Robin repeats his mother's talk suggest how the sequential environment may be implicated in his choice of pitch contour in relation to her immediately prior turn. The study has been restricted to one child-adult pair and the number of interactional environments examined in detail is as yet quite small, with the particular limitation that only cases where the child's turn involves verbal repetition have been analysed. With these caveats, it is claimed that some important aspects of tonal usage are revealed if the starting point is taken to be the relationship of the child's turn to the immediately prior turn of the carer, rather than the illocutionary force of the turn in question as has been traditional. The analysis so far suggests that the child's tone may take one of two forms with respect to the prior, each of which has distinct interactional implications. It may be a tonal repeat, aligning the child with the course of

action in progress. Alternatively, it may be a tonal contrast, which initiates a new course of action by the child.

According to this view of English intonation, the speaker's choice of tone in a turn does not necessarily require access to a lexicon of tonal meanings of the kind that is often assumed in intonation research. Instead, it can be locally determined by considerations of producing a tone that is recognisably the same or different from the one that the prior speaker has just produced. In this respect tone, like accent placement, is a resource for the local management of interactional meaning: choice of tone, like choice of accent placement, is a resource that the speaker can employ to display how the current turn relates to its proximate context. If this is indeed the case, it goes some way to explaining why studies of children's tone development have been inconclusive: the distribution of tones in the child's talk at different developmental points will be determined not primarily by processes of internal maturation, nor by progressively learning to associate a tone with a range of context-free pragmatic meanings, but by the unfolding detail of the interactions that they have with their carer on the particular occasions on which they are recorded. Changes in child-carer interactions over time may in part be determined by maturational factors, the carer adjusting to the child in terms of language and activity as the child gets older, but the basic procedures of aligning with a current action or initiating a new one, will remain relevant whatever the age of the participants in the talk.

References

Balog, H., & Snow, D. (2007). Application of relational and independent analyses for intonation production in young children. *Journal of Phonetics , 35* (1), 118-133.

Barth-Weingarten, D. (2009). When to say something; observations on prosodic-phonetic cues. In Barth-Weingarten, D, Dehé, N & Wichmann, A (eds). *Where prosody meets pragmatics.* Studies in Pragmatics 8. Emerald. 143-182

Corrin, J., Tarplee, C., & Wells, B. (2001). Interactional linguistics and language development: a conversation analytic perspective on emergent syntax. In M. Selting, & E. Couper-Kuhlen, *Studies in Interactional Linguistics* (pp. 199-255). Amsterdam and Philadelphia: Benjamins.

Corrin, J. (2010) Hm? What? Maternal repair and early child talk In: Gardner,H and Forrester,M. (eds) *Analysing Interactions in Childhood: insights from Conversation Analysis.* Wiley Blackwell. 23-41.

Couper-Kuhlen, E. (1996) .The prosody of repetition: on quoting and mimicry. In Couper-Kuhlen, E., & Selting, M. (1996). 366-405.

Couper-Kuhlen, E., & Ford, C. E. (2004). *Sound patterns in interaction.* Amsterdam; Philadelphia: Benjamins.

Couper-Kuhlen, E., & Selting, M. (1996). *Prosody in Conversation: Interactional Studies.* Cambridge: Cambridge University Press.

Cruttenden, A. (1997). *Intonation, (2nd edition).* Cambridge, UK: Cambridge University Press.

Flax, J., Lahey, M., Harris, K., & Boothroyd, A. (1991). Relations between prosodic variables and communicative functions. *Journal of Child Language , 18*, 3-19.

Gussenhoven, C. (2004). *The Phonology of Tone and Intonation.* Cambridge: Cambridge University Press.

Halliday, M. A. (1967). *Intonation and Grammar in British English.* The Hague: Mouton.

Halliday, M. A. (1975). *Learning How to Mean: Explorations in the Development of Language.* London: Edward Arnold.

Keenan, E. O. (1983). Making it last: Repetition in children's discourse. In E. Ochs, & B. B. Schieffelin, *Acquiring Conversational Competence* (pp. 26-39). London: Routledge Kegan Paul.

Levelt, W. J. (1989). *Speaking: From Intention to Articulation.* Cambridge, Mass.: MIT Press.

Local, J., & Wootton, T. (1995). Interactional and phonetic aspects of immediate echolalia in autism: A case study. *Clinical Linguistics and Phonetics , 9*, 155–84.

Schegloff, E. A. (1996). Confirming allusions: Towards an empirical account of action. *American journal of Sociology , 104*, 161-216.

Szczepek-Reed, B. (2004). Turn-final intonation in English. In E. Couper-Kuhlen, & C. E. Ford, *Sound Patterns in Interaction* (pp. 97-118). Amsterdam; Philadelphia: Benjamins.

Szczepek-Reed, B. (2006). *Prosodic Orientation in English Conversation.* Basingstoke: Palgrave Macmillan.

Tarplee, C. (1996). Working on young children's utterances: Prosodic aspects of repetition during picture labelling. In E. Coupler-Kuhlen, & M. Selting, *Prosody in Conversation: Interactional Studies* (pp. 406-435). Cambridge: Cambridge University Press.

Walker, G. (2004). *The Phonetic Design of Turn Endings, Beginnings and Continuations in Conversation; PhD Thesis.* York, UK: University of York.

Wells, B., & Corrin, J. (2004). Prosodic resources, turn-taking and overlap in children's talk-in-interaction . In E. Couper-Kuhlen, & C. E. Ford, *Sound Patterns in Interaction* (pp. 119 – 143). Amsterdam and Philadelphia: Benjamins.

Wells, B., & Macfarlane, S. (1998). Prosody as an interactional resource: turn-projection and overlap. *Language and Speech , 41*, 265-298.